MAPLST1617-030CF

Tyco Electronics

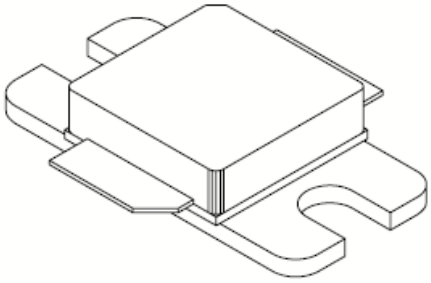
LDMOS RF Line Power FET Transistor
30 W , 1600-1700 MHz, 28V

M/A-COM Products
Released - Rev. 07.07

Designed for INMARSAT applications in the 1620-1670 MHz frequency band.

- Typical two tone performance (IMD=-30 dBc):
  Average output power: 15W
  Gain: 14dB (typ.)
  Efficiency: 38% (typ.)
- 10:1 VSWR ruggedness at 30W, 28V,1670MHz)

Product Image



MAPLST1617-030CF

MAXIMUM RATINGS

Parameter	Symbol	Rating	Units
Drain—Source Voltage	V_{DSS}	65	V_{dc}
Gate—Source Voltage	V_{GS}	20	V_{dc}
Total Power Dissipation @ T_C = 25 °C	P_D	97	W
Storage Temperature	T_{STG}	-40 to +150	°C
Junction Temperature	T_J	+200	°C

THERMAL CHARACTERISTICS

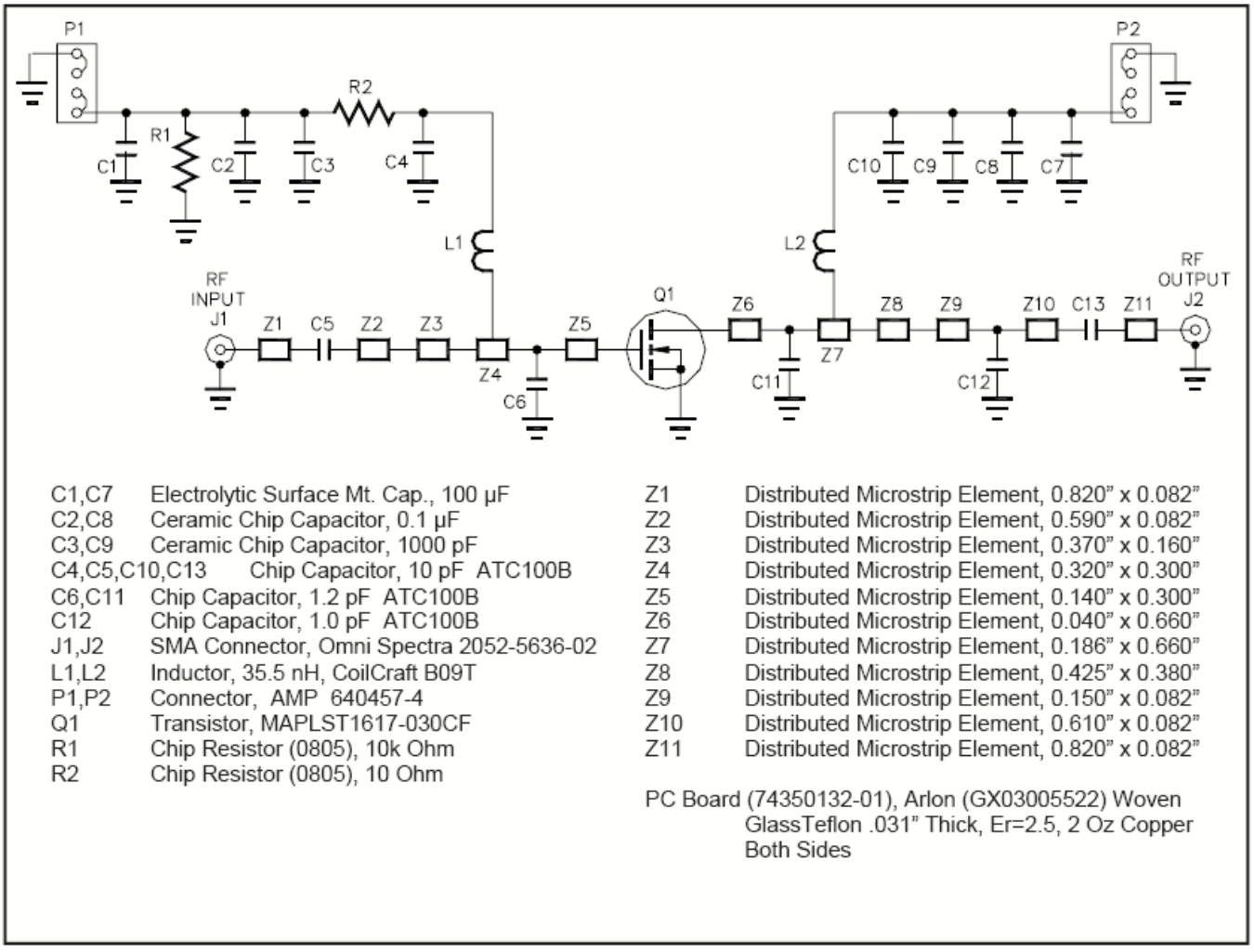
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\Theta JC}$	1.8	ºC/W

NOTE—**CAUTION**—MOS devices are susceptible to damage from electrostatic charge. Precautions in handling and packaging MOS devices should be observed.

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
  Visit www.macom.com for additional data sheets and product information.

Characteristic	Symbol	Min	Typ	Max	Unit
DC CHARACTERISTICS @ 25°C					
Drain-Source Breakdown Voltage (V_{GS} = 0 Vdc, I_D = 20 µAdc)	$V_{(BR)DSS}$	65	—	—	Vdc
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28 Vdc, V_{GS} = 0)	I_{DSS}	—	—	1	µAdc
Gate—Source Leakage Current (V_{GS} = 5 Vdc, V_{DS} = 0)	I_{GSS}	—	—	1	µAdc
Gate Threshold Voltage (V_{DS} = 10 Vdc, I_D = 1 mA)	$V_{GS(th)}$	2	—	4	Vdc
Gate Quiescent Voltage (V_{DS} = 28 Vdc, I_D = 250 mA)	$V_{DS(Q)}$	2	—	4.5	Vdc
Drain-Source On-Voltage (V_{GS} = 10 Vdc, I_D = 1 A)	$V_{DS(on)}$	—	0.2	—	Vdc
Forward Transconductance (V_{GS} = 10 Vdc, I_D = 1 A)	Gm	—	1.2	—	S
DYNAMIC CHARACTERISTICS @ 25°C					
Input Capacitance (Including Input Matching Capacitor in Package) (V_{DS} = 28 Vdc, V_{GS} = 0, f = 1 MHz)	C_{iss}	—	90	—	pF
Output Capacitance (V_{DS} = 28 Vdc, V_{GS} = 0, f = 1 MHz)	C_{oss}	—	32.5	—	pF
Reverse Transfer Capacitance (V_{DS} = 28 Vdc, V_{GS} = 0, f = 1 MHz)	C_{rss}	—	1.5	—	pF
RF FUNCTIONAL TESTS @ 25°C (In M/A-COM Test Fixture)					
CW Gain (V_{DS} = 28 Vdc, P_{OUT} = 30 W (avg.), I_{DQ} = 250 mA, f0 = 1670 MHz)	G_{ps}	—	14	—	dB
CW Drain Efficiency (V_{DS} = 28 Vdc, P_{OUT} = 30 W (avg.), I_{DQ} = 250 mA, f0 = 1670 MHz)	EFF (η)	—	50	—	%
CW Input Return Loss (V_{DS} = 28 Vdc, P_{OUT} = 30 W (avg.), I_{DQ} = 250 mA, f0 = 1670 MHz)	IRL	—	-10	-9	dB
IMD (V_{DS} = 28 Vdc, P_{OUT} = 15 W (avg.) (30 W PEP), I_{DQ} = 250 mA, f0 = 1670 MHz, f1 = 1670.1 MHz)	IMD	—	-30	—	dBc
Output VSWR Tolerance (V_{DS} = 28 Vdc, P_{OUT} = 30 W (avg.), I_{DQ} = 250 mA, f0 = 1670 MHz)	Ψ	No Degradation In Output Power Before and After Test			

(1) Device specifications obtained on a Production Test Fixture.



C1,C7	Electrolytic Surface Mt. Cap., 100 µF
C2,C8	Ceramic Chip Capacitor, 0.1 µF
C3,C9	Ceramic Chip Capacitor, 1000 pF
C4,C5,C10,C13	Chip Capacitor, 10 pF ATC100B
C6,C11	Chip Capacitor, 1.2 pF ATC100B
C12	Chip Capacitor, 1.0 pF ATC100B
J1,J2	SMA Connector, Omni Spectra 2052-5636-02
L1,L2	Inductor, 35.5 nH, CoilCraft B09T
P1,P2	Connector, AMP 640457-4
Q1	Transistor, MAPLST1617-030CF
R1	Chip Resistor (0805), 10k Ohm
R2	Chip Resistor (0805), 10 Ohm

Z1	Distributed Microstrip Element, 0.820" x 0.082"
Z2	Distributed Microstrip Element, 0.590" x 0.082"
Z3	Distributed Microstrip Element, 0.370" x 0.160"
Z4	Distributed Microstrip Element, 0.320" x 0.300"
Z5	Distributed Microstrip Element, 0.140" x 0.300"
Z6	Distributed Microstrip Element, 0.040" x 0.660"
Z7	Distributed Microstrip Element, 0.186" x 0.660"
Z8	Distributed Microstrip Element, 0.425" x 0.380"
Z9	Distributed Microstrip Element, 0.150" x 0.082"
Z10	Distributed Microstrip Element, 0.610" x 0.082"
Z11	Distributed Microstrip Element, 0.820" x 0.082"

PC Board (74350132-01), Arlon (GX03005522) Woven GlassTeflon .031" Thick, Er=2.5, 2 Oz Copper Both Sides

FIGURE 1. 1620—1670 MHZ TEST FIXTURE SCHEMATIC

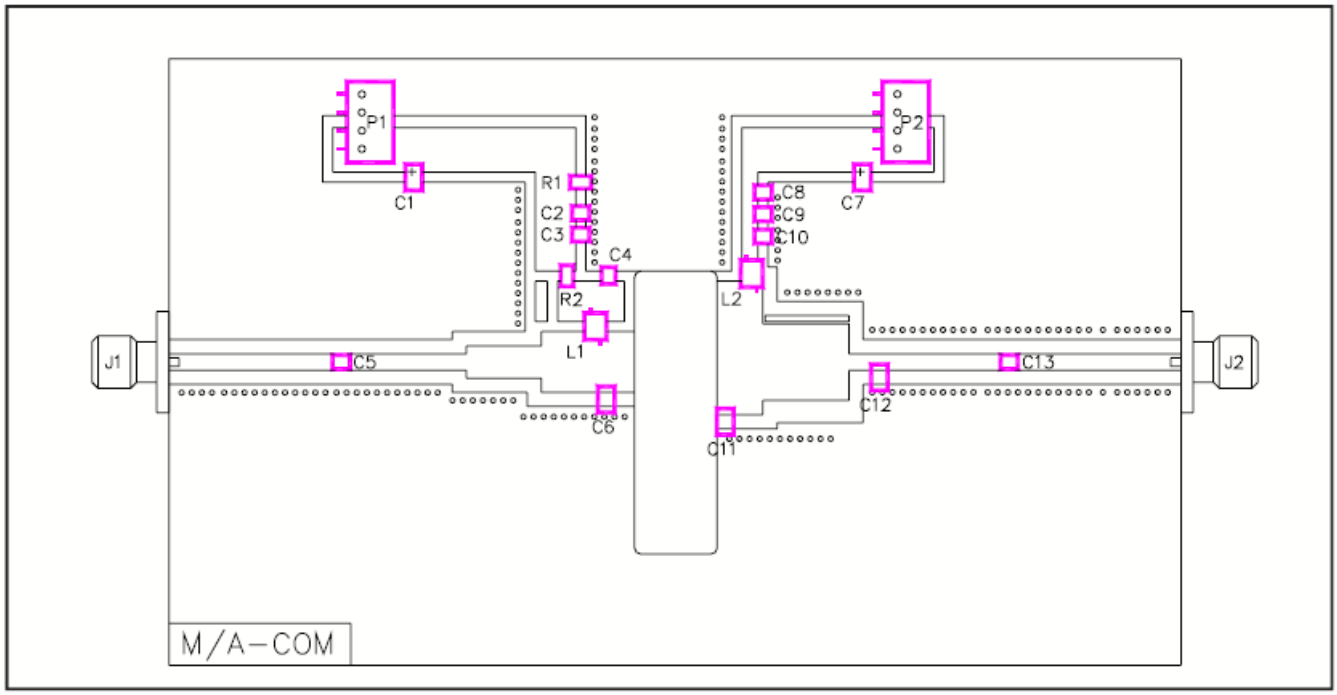
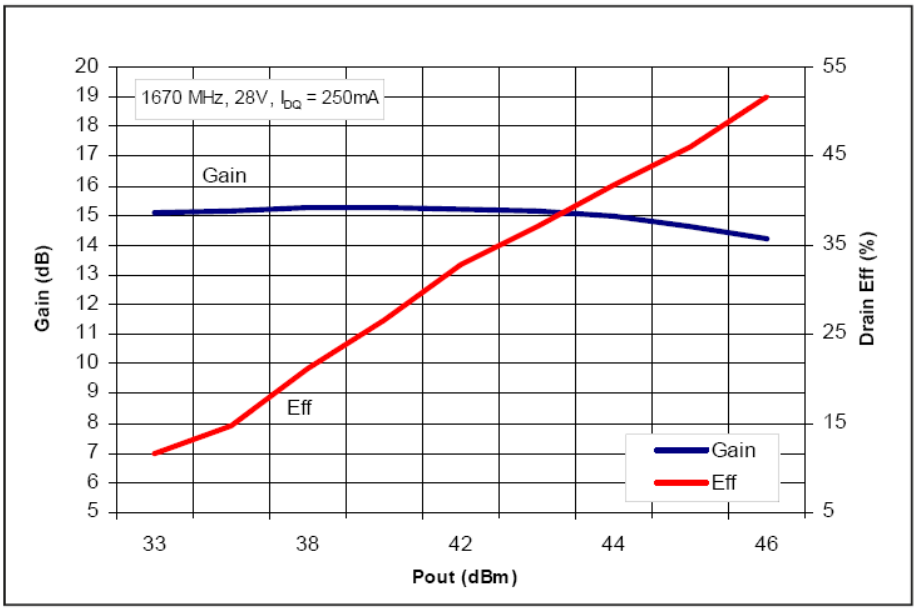
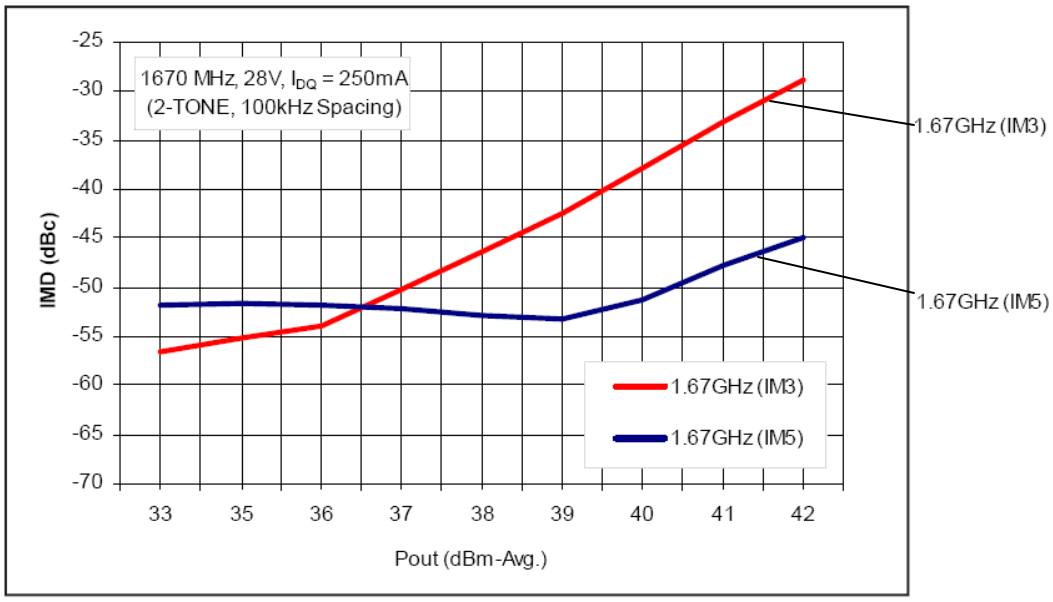


FIGURE 2. 1620—1670 MHZ TEST FIXTURE COMPONENT LAYOUT



GRAPH 1. CW: GAIN AND EFFICIENCY VS. OUTPUT POWER

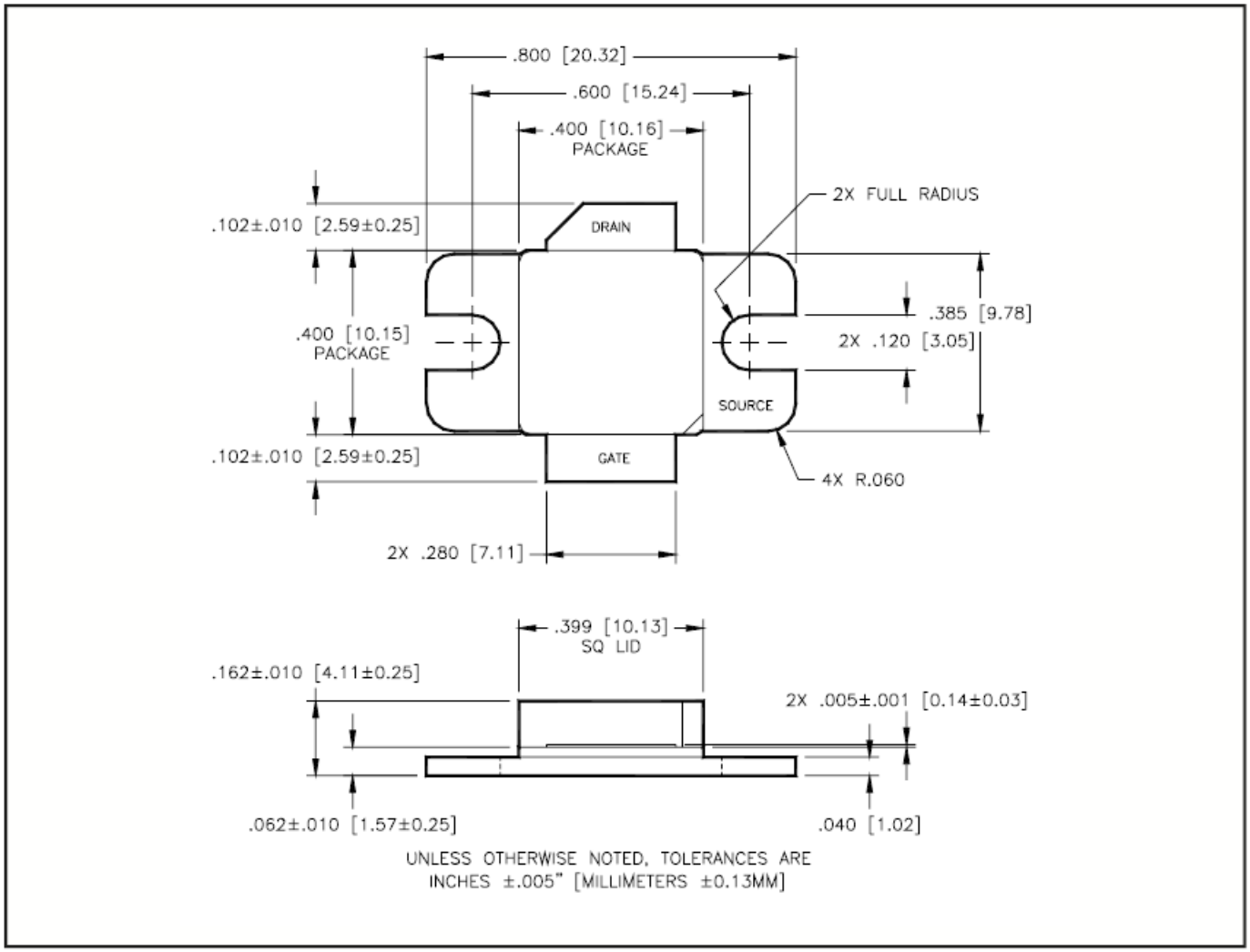


GRAPH 2. TWO TONE: INTERMODULATION DISTORTION VS. OUTPUT POWER

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.

PACKAGE DIMENSIONS



- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.